

Landscape Information Model Building

Matt Zambelli **Spring 2008** Workshop

The idea of this project is to develop a spatially design + visualization work flow incorporating widely used industry software programs. The programs that are explored, evaluated, and documented are the **ArcGIS Suit 9.2** and what I call the "**Google Suit**", **Google Earth 4.3** + **SketchUp Pro 6**.

LIMB Process Outline

1. Gathering Data (Web)
2. Viewing + Analyzing Data (ArcMap)
3. Exporting Data (ArcMap to SketchUp)
4. Manipulating Data a.k.a. "Design" (SketchUp)
5. Exporting Data (SketchUp to Google Earth)
6. Visualizing Data (Google Earth)

Gathering Data through the Internet

<http://www.pasda.psu.edu/>

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PASDA PENNSYLVANIA SPATIAL DATA ACCESS
The Pennsylvania Geospatial Data Clearinghouse

Home About PASDA Download Data Online Mapping News & Events Related Links Tutorials Help

Data Shortcuts

- Aerial Photography
- Topographic Maps
- State-wide Data
- Browse FTP

Welcome to PASDA

Pennsylvania Spatial Data Access (PASDA) is the official public access geospatial information clearinghouse for the **Commonwealth of Pennsylvania** and has served for twelve years as Pennsylvania's node on the **National Spatial Data Infrastructure**, **Geospatial One-Stop**, and the **National Biological Information Infrastructure**.

PASDA was developed by the Pennsylvania State University as a service to the citizens, governments, and businesses of the Commonwealth. PASDA is a cooperative project of the Governor's Office of Administration, Office for Information Technology, **Geospatial Technologies Office** and the **Penn State Institutes of Energy and the Environment** of the **Pennsylvania State University**. Funding and support is provided by the Pennsylvania Office for Information Technology, **Geospatial Technologies Office**. In addition, PASDA also receives substantial

Download New Data

Allegheny County data now available in Mapservices and for download [Quick Link>>](#)

PAMAP Imagery Imagery now available in Mapservices and for download [Quick Link>>](#)

Upcoming Events

DCNR PAMAP LIDAR Workshop
Penn State Harrisburg
Capitol Union Building
May 13, 2008

Pennsylvania GIS Conference 2008
Radisson Penn Harris Hotel, Camp Hill, PA
May 14-15, 2008

2008 ESRI International User Conference (ESRI UC)
San Diego Convention Center, San Diego, California
August 4-8, 2008

Featured Service

Imagery Viewer and Download Tool

Program	Name	Year	Download
DCNR PAMAP Program - Bath	DCNR PAMAP Program - Bath	2008	[Download Icon]
DCNR PAMAP Program - Bedford	DCNR PAMAP Program - Bedford	2004	[Download Icon]
DCNR PAMAP Program - Berks	DCNR PAMAP Program - Berks	2004	[Download Icon]
DCNR PAMAP Program - Blair	DCNR PAMAP Program - Blair	2008	[Download Icon]
DCNR PAMAP Program - Bradford	DCNR PAMAP Program - Bradford	2008	[Download Icon]
DCNR PAMAP Program - Butler	DCNR PAMAP Program - Butler	2008	[Download Icon]
DCNR PAMAP Program - Cameron	DCNR PAMAP Program - Cameron	2008	[Download Icon]
DCNR PAMAP Program - Carbon	DCNR PAMAP Program - Carbon	2008	[Download Icon]
DCNR PAMAP Program - Centre	DCNR PAMAP Program - Centre	2008	[Download Icon]
DCNR PAMAP Program - Chester	DCNR PAMAP Program - Chester	2008	[Download Icon]
DCNR PAMAP Program - Clearfield	DCNR PAMAP Program - Clearfield	2008	[Download Icon]
DCNR PAMAP Program - Clinton	DCNR PAMAP Program - Clinton	2008	[Download Icon]
DCNR PAMAP Program - Columbia	DCNR PAMAP Program - Columbia	2008	[Download Icon]
DCNR PAMAP Program - Crawford	DCNR PAMAP Program - Crawford	2008	[Download Icon]
DCNR PAMAP Program - Elk	DCNR PAMAP Program - Elk	2008	[Download Icon]

Gathering Data through the Internet

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PASDA Data Access Wizard - Mozilla Firefox

File Edit View History Bookmarks Tools Help

<http://www.pasda.psu.edu/uci/SearchResults.aspx?shortcutKeyword=aerial&searchType=shortcut&session>

DCNR PAMAP Program - Beaver	DCNR PAMAP Program	2006			
DCNR PAMAP Program - Bedford	DCNR PAMAP Program	2004			
DCNR PAMAP Program - Berks	DCNR PAMAP Program	2004			
DCNR PAMAP Program - Blair	DCNR PAMAP Program	2006			
DCNR PAMAP Program - Bradford	DCNR PAMAP Program	2005			
DCNR PAMAP Program - Butler	DCNR PAMAP Program	2006			
DCNR PAMAP Program - Cambria	DCNR PAMAP Program	2006			
DCNR PAMAP Program - Cameron	DCNR PAMAP Program	2006			
DCNR PAMAP Program - Carbon	DCNR PAMAP Program	2005			
DCNR PAMAP Program - Centre	DCNR PAMAP Program	2006			
DCNR PAMAP Program - Clarion	DCNR PAMAP Program	2006			
DCNR PAMAP Program - Clearfield	DCNR PAMAP Program	2006			
DCNR PAMAP Program - Clinton	DCNR PAMAP Program	2005			
DCNR PAMAP Program - Columbia	DCNR PAMAP Program	2005			
DCNR PAMAP Program - Crawford	DCNR PAMAP Program	2005			
DCNR PAMAP Program - Elk	DCNR PAMAP Program	2006			

http://www.pasda.psu.edu/uci/MetadataDisplay.aspx?entry=PASDA&file=PAMAP_Centre2006.xml&dataset=1093

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Metadata

This page provides a summary of the dataset's metadata. Select one of the links to view the full metadata document or download the dataset.

Metadata Summary

PAMAP Program 2006 Color Orthophotos of Centre County, Pennsylvania

Title: PAMAP Program 2006 Color Orthophotos of Centre County, Pennsylvania
 Originator: PAMAP Program, PA Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey
 Publication Date: 2006

Abstract: An orthomosaic is a remotely sensed image data that has been positionally corrected for camera lens distortion, vertical displacement and variations in aircraft altitude and orientation. Orthomosaic combines the image characteristics of a photograph with the geometric qualities of a map. The PAMAP 2006 color orthomosaic was produced at 1 foot pixel resolution. Each orthomosaic provides imagery for a 10,000 x 10,000 ft. block on the ground. The projected coordinate system is Pennsylvania State Plane South with a NAD83 datum. There is no image overlap between adjacent files. The orthomosaic filenames were derived from the northwest corner of each ortho file using the first four digits of the

MapServices (ArcMap/GoogleEarth/WMS)

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MetadataDisplay - Mozilla Firefox

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[http://www.pasda.psu.edu/uci/MetadataDisplay.aspx?entry=PASDA&file=PAMAP_Centre2006.xml&dataset=](#)

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Abstract.

An orthoimage is remotely sensed image data that has been positionally corrected for camera lens distortion, vertical displacement and variations in aircraft altitude and orientation. Orthoimagery combines the image characteristics of a photograph with the geometric qualities of a map. The PAMAP 2006 natural color orthoimages were produced at 1-foot pixel resolution. Each orthoimage provides imagery for a 10,000 x 10,000 ft. block on the ground. The projected coordinate system is Pennsylvania State Plane South with a NAD83 datum. There is no image overlap between adjacent files. The orthoimage filenames were derived from the northwest corner of each ortho tile using the first four digits of the northing and easting coordinates referenced to the Pennsylvania State Plane coordinate system, followed by the State designator "PA," and the State Plane zone designator "S." This dataset consists of 10000 x 10000 ft. uncompressed natural color (24-bit) GeoTIFF files at a pixel resolution of 1 foot. The imagery was captured at a negative scale of 1:19200 for the purpose of producing orthophotos.

[View Full Metadata Document](#)

[Download Full XML Metadata Document \(Right-click and save...\)](#)

[FTP Download](#)

[Data Applications & Viewers](#)

[MapServices \(ArcMap/GoogleEarth/WMS\)](#)

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Penn State Institutes of Energy and the Environment
E-Mail: pasda@psu.edu
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[http://www.pasda.psu.edu/uci/MapService.aspx?Dataset=1093](#)

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Map Service

The links on this page provide access to the dataset via a dynamic MapService.

This allows you to use the data without the need to download anything.

You may add the data to ArcMap, view it in Google Earth or connect using a WMS client.

Map Service Details

Title: DCNR PAMAP Program - Centre
Originator: DCNR PAMAP Program
Date: 2006

[Previous Page](#)

[View in Google Earth](#)

WMS Service:

Map Server
URL: <http://maps.pasda.psu.edu>

Add to ArcMap

ArcIMS Image S
Click Here to A
Click Here for T

Opening PAMAP_AerialPhotography.kmz

You have chosen to open

PAMAP_AerialPhotography.kmz
which is a: Google Earth KMZ file
from: <http://maps.pasda.psu.edu>

What should Firefox do with this file?

☐ Open with Google Earth (default)

☒ Save to Disk

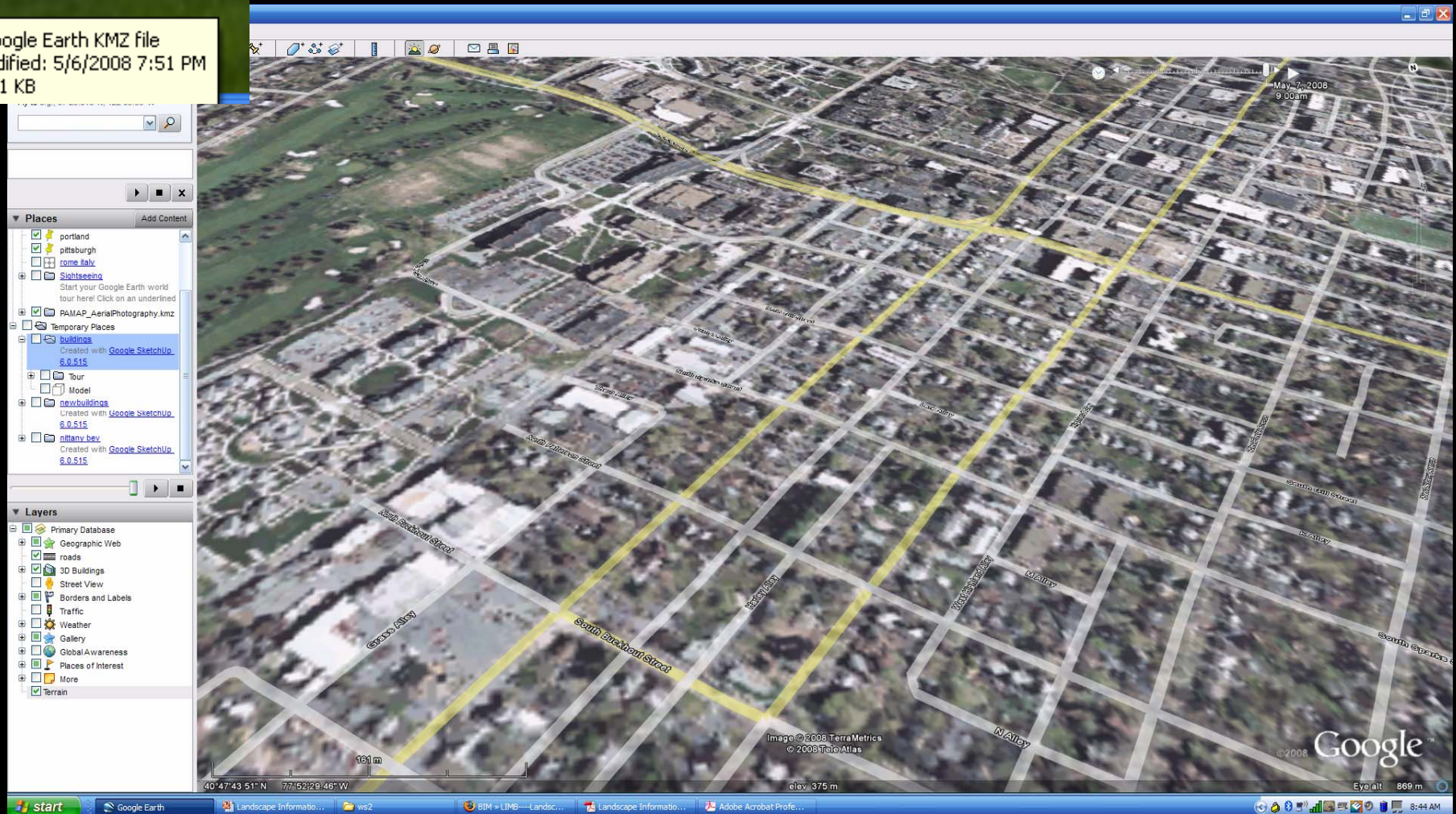
☐ Do this automatically for files like this from now on.

OK Cancel

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Gathering Data through the Internet

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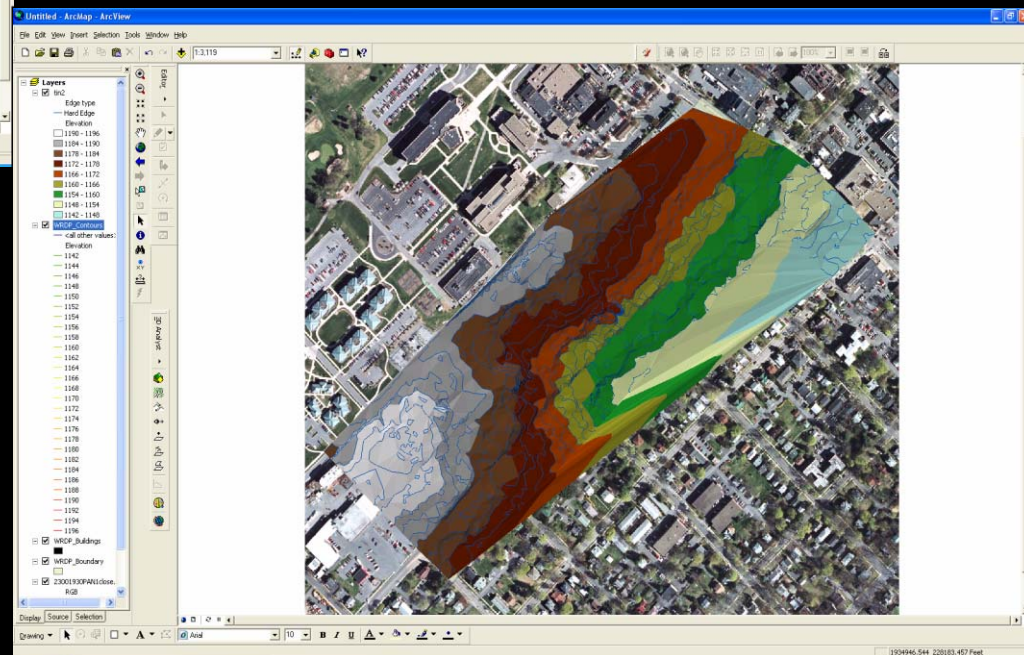
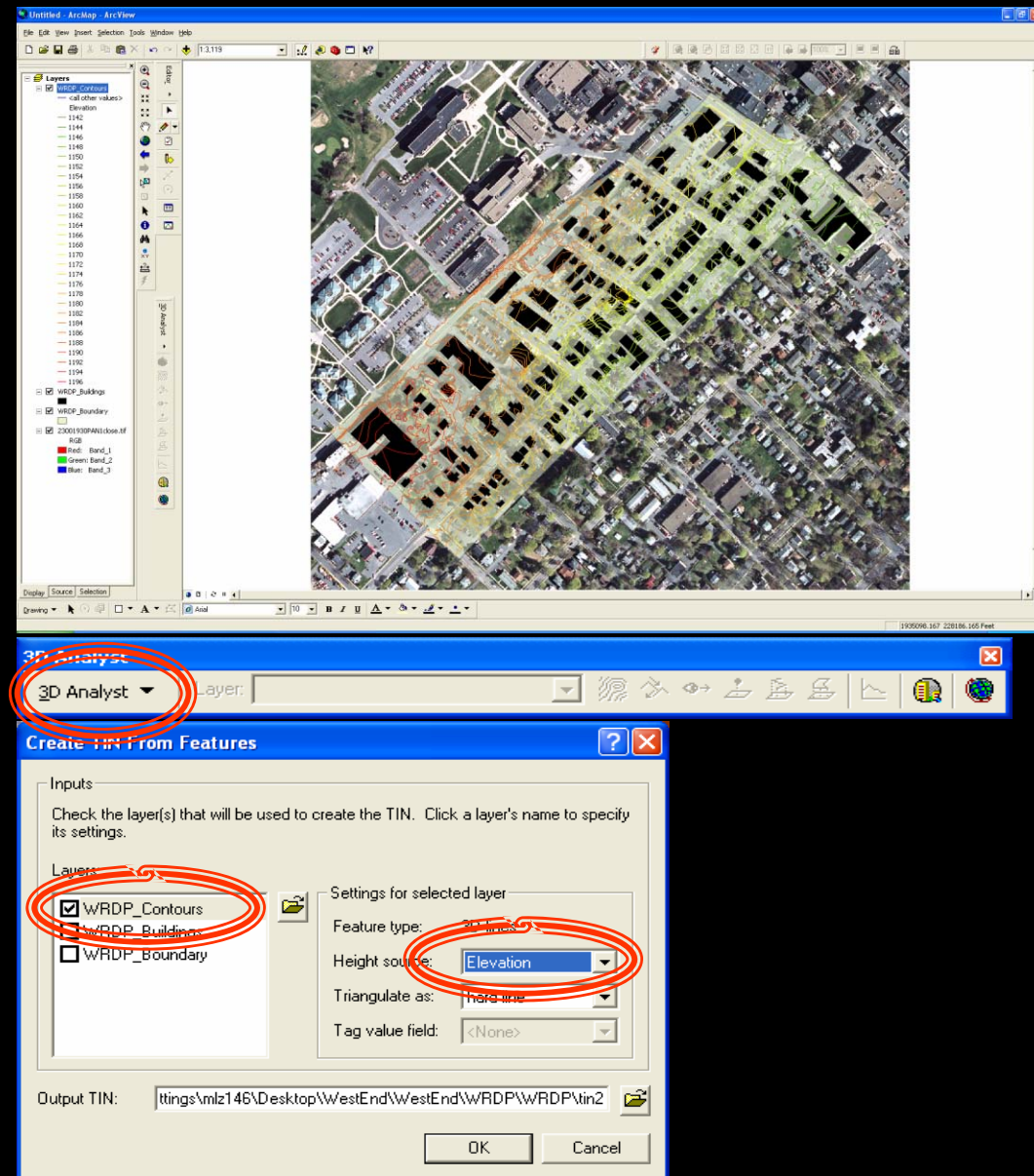


Viewing + Analyzing Data (Arc Map)

LIMB Process Outline

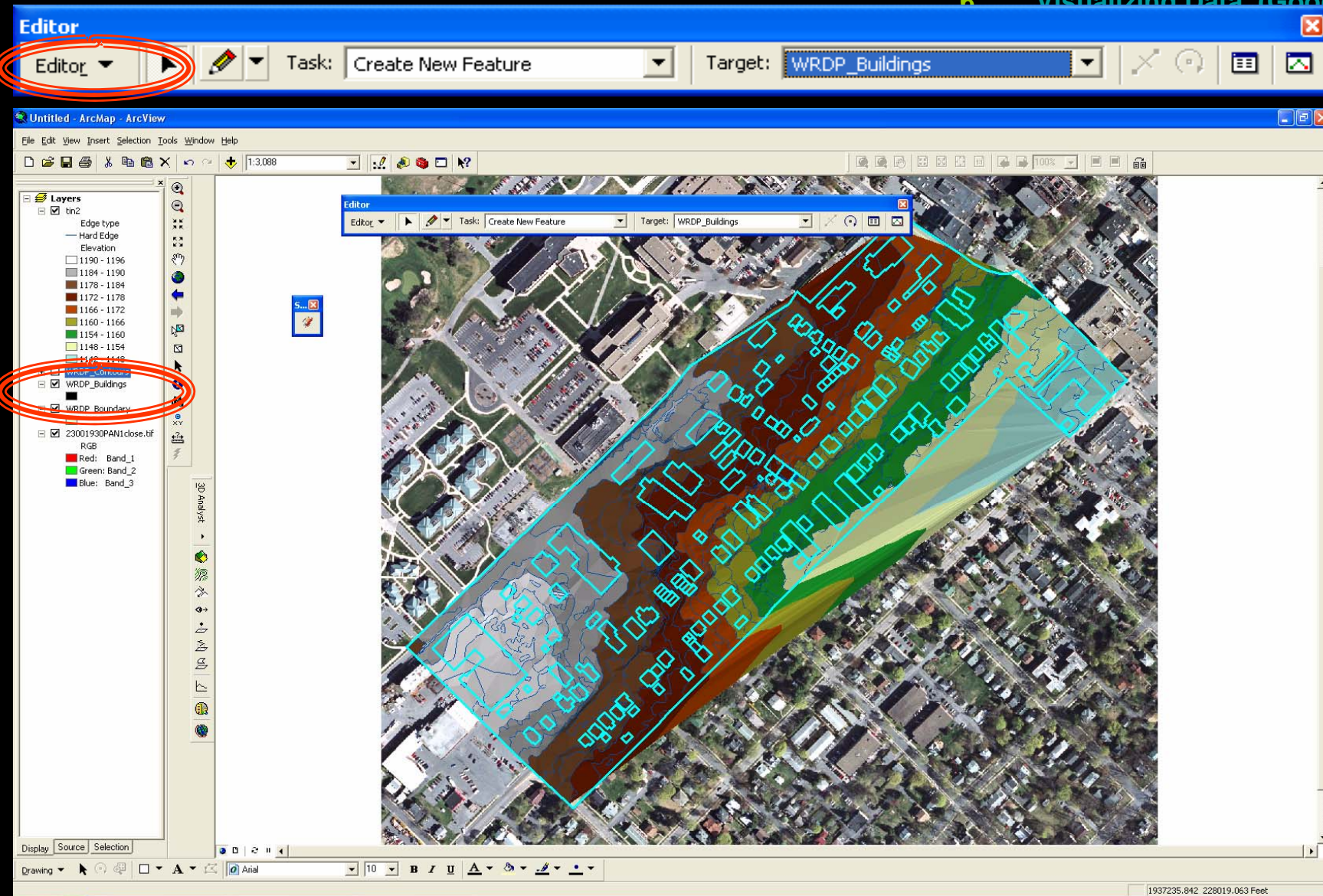
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Creating a 3D terrain from Contours using 3D Analyst



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Viewing + Analyzing Data (Arc Map)

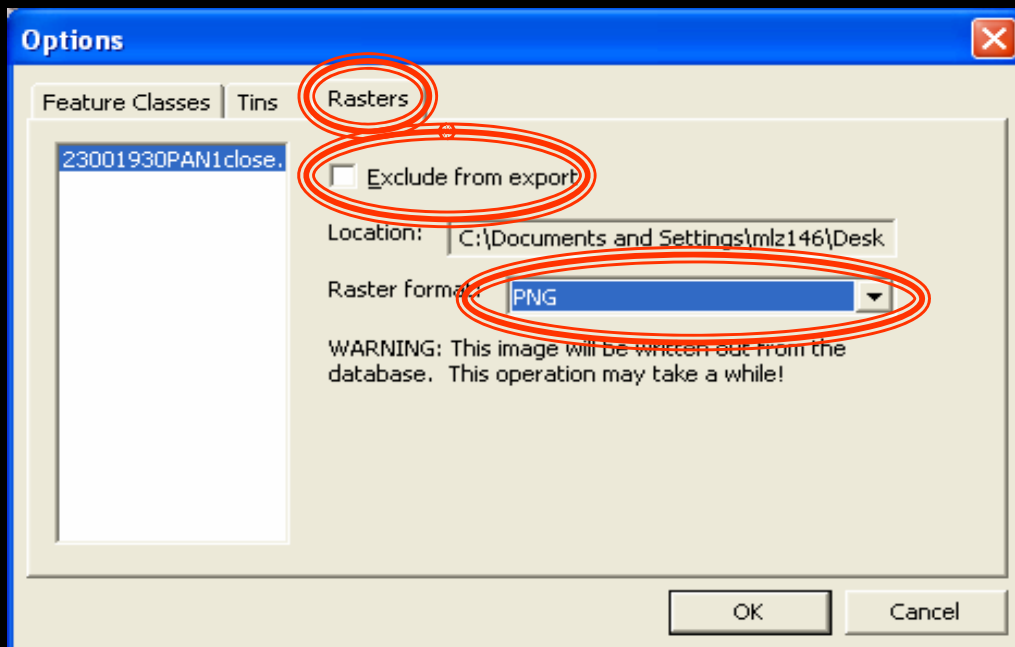
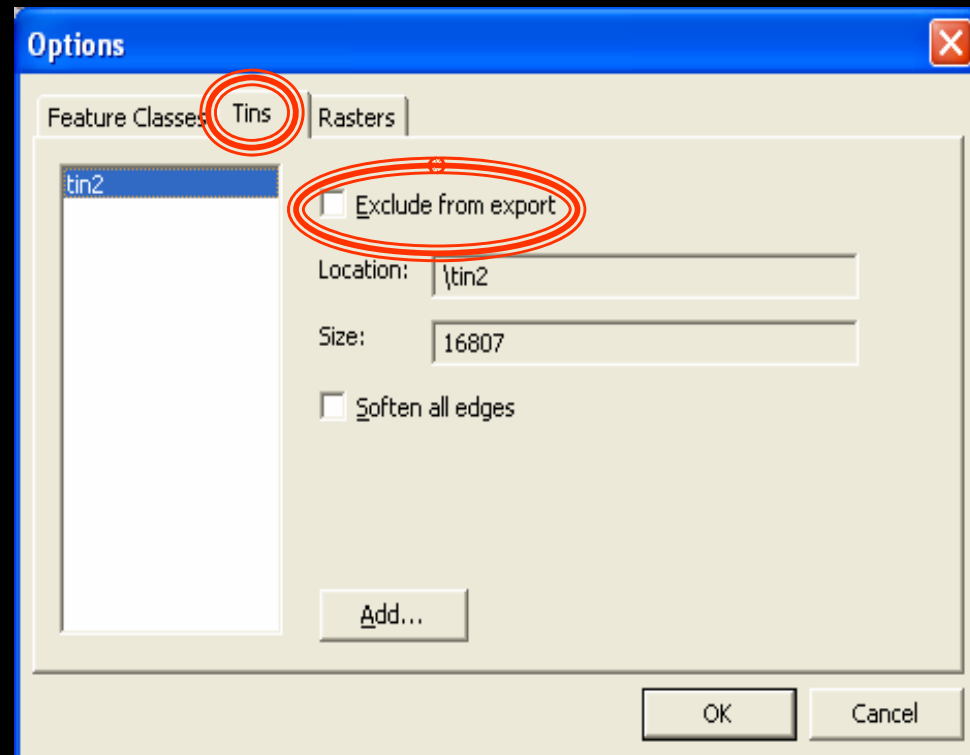
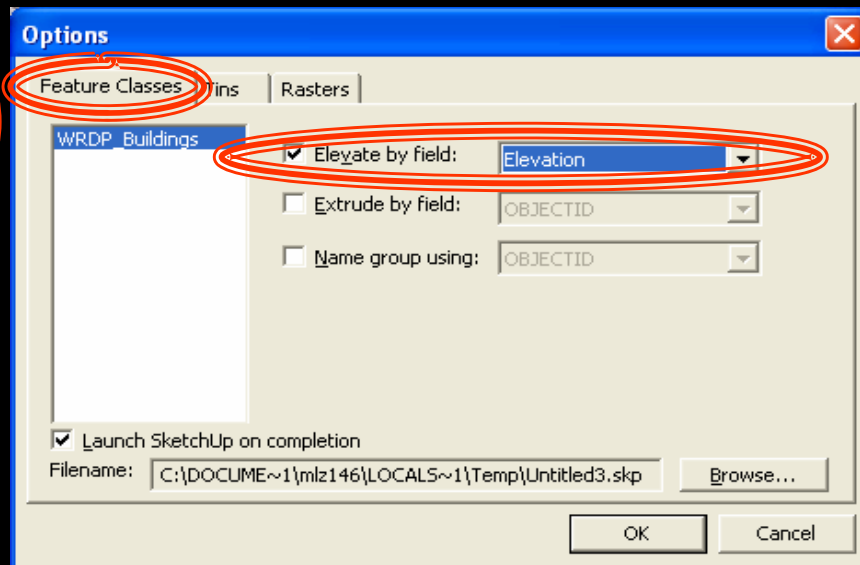


Selecting data to export into SketchUp using the editor toolbar in ArcMap

Exporting Data (ArcMap to SketchUP)

LIMB

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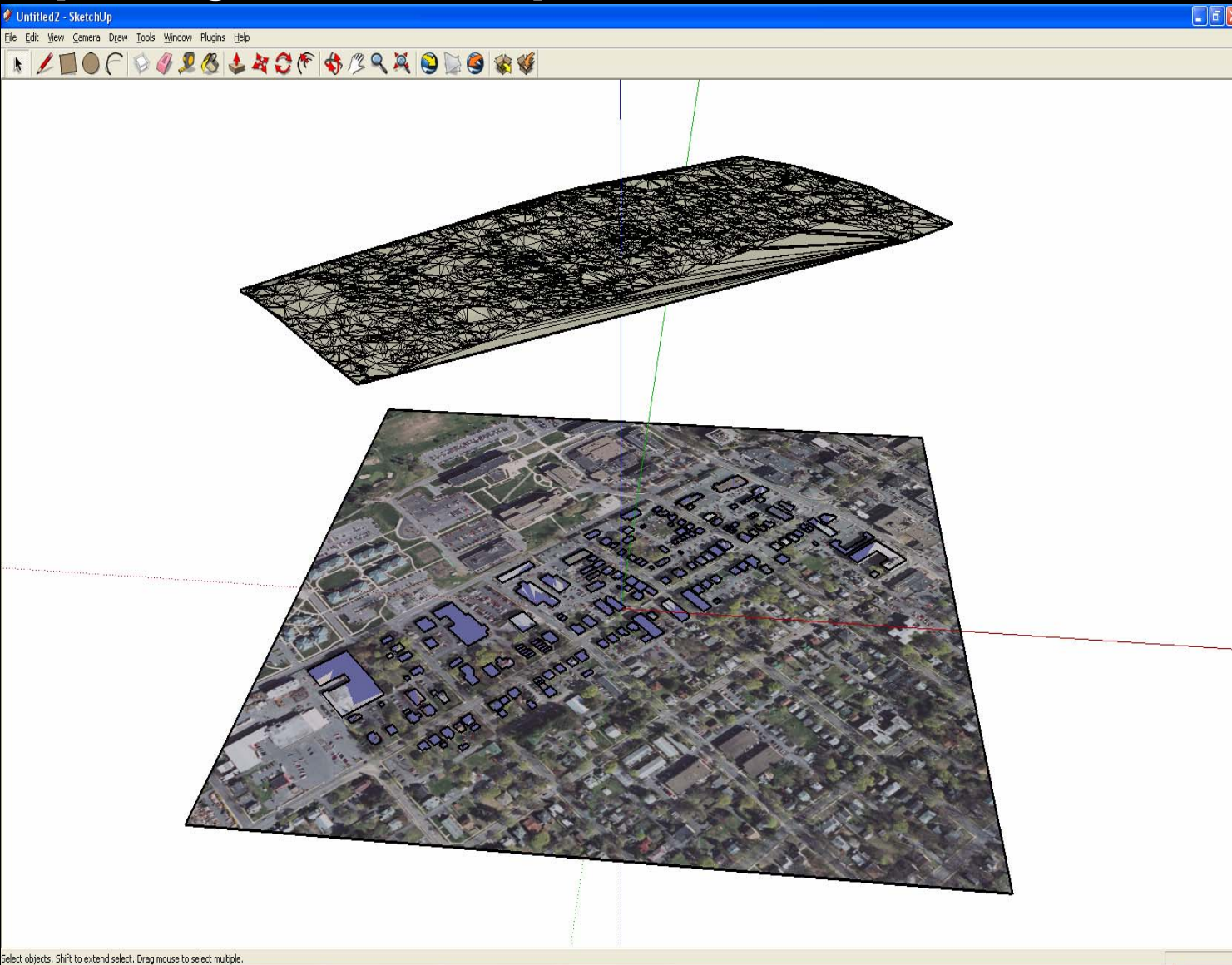
When exporting data from ArcMap to SketchUp be sure to remember that only selected feature classes will appear in the export options. Also beware that the "exclude from export" option is checked by default on the TIN and Raster tabs.

3. Exporting Data (ArcMap to SketchUp)
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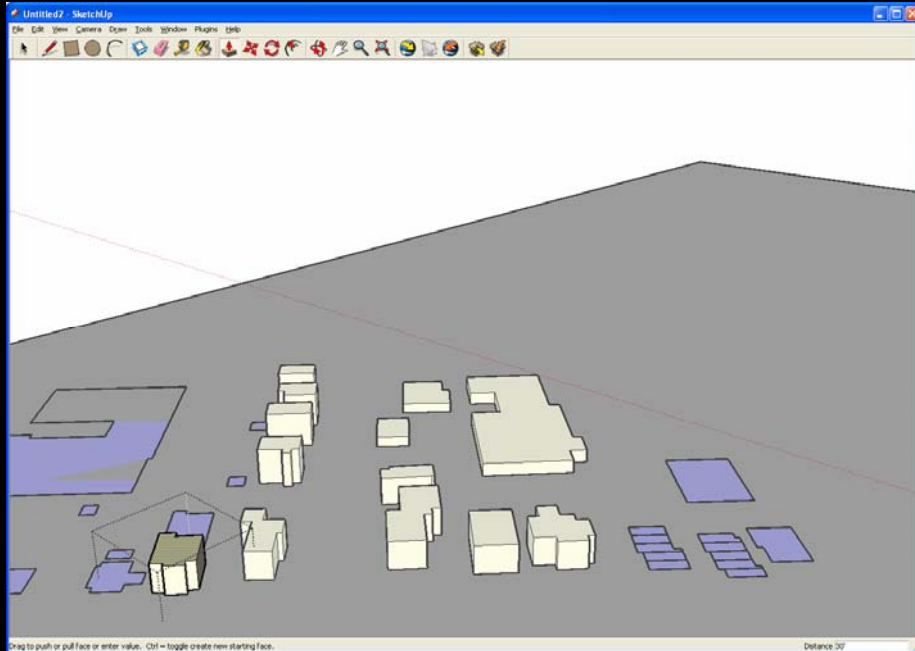
Exporting Data (ArcMap to SketchUP)

Exporting Issue:

As you can see when the model appears in SketchUp the buildings and aerals are at a different elevation than the terrain due to a lack of value fields in the information.



Manipulating Data (SketchUP)



Using the push/pull tool you can extrude the building footprints to their proper height

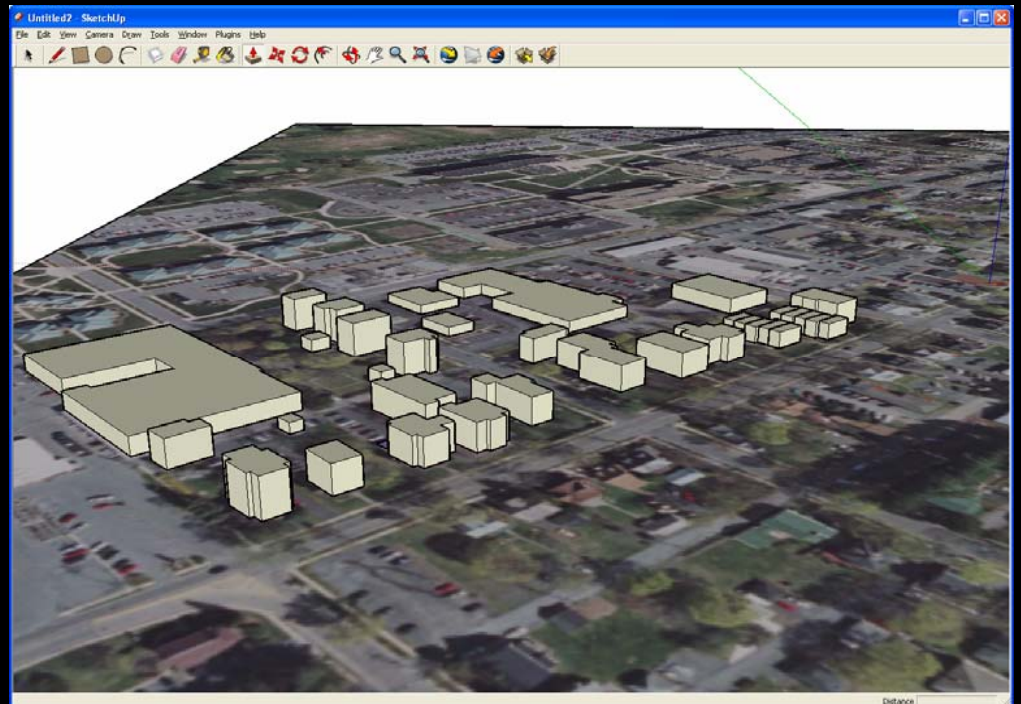
LIMB

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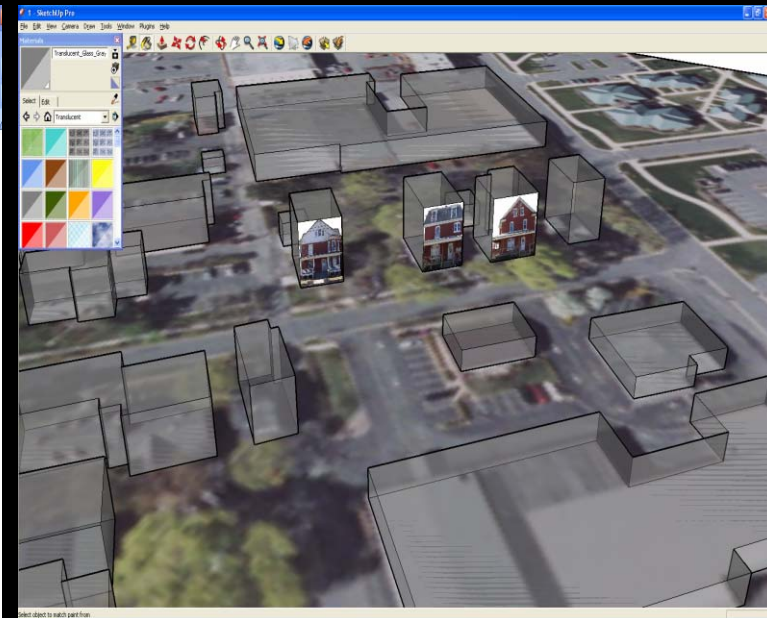
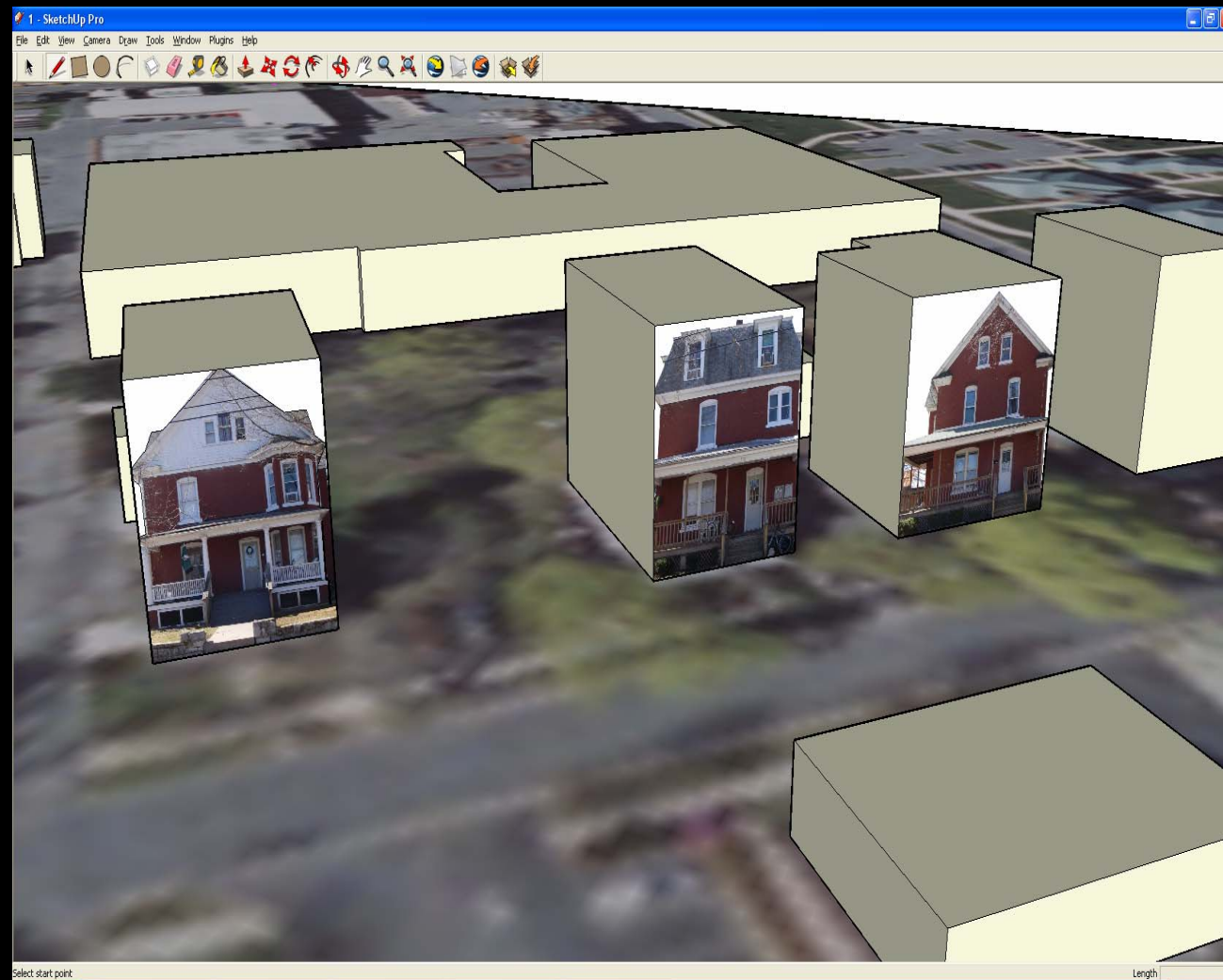
Caution!!!

First you must double click any footprint you wish to extrude due to grouping.



4. Manipulating Data a.k.a Design (SketchUp)
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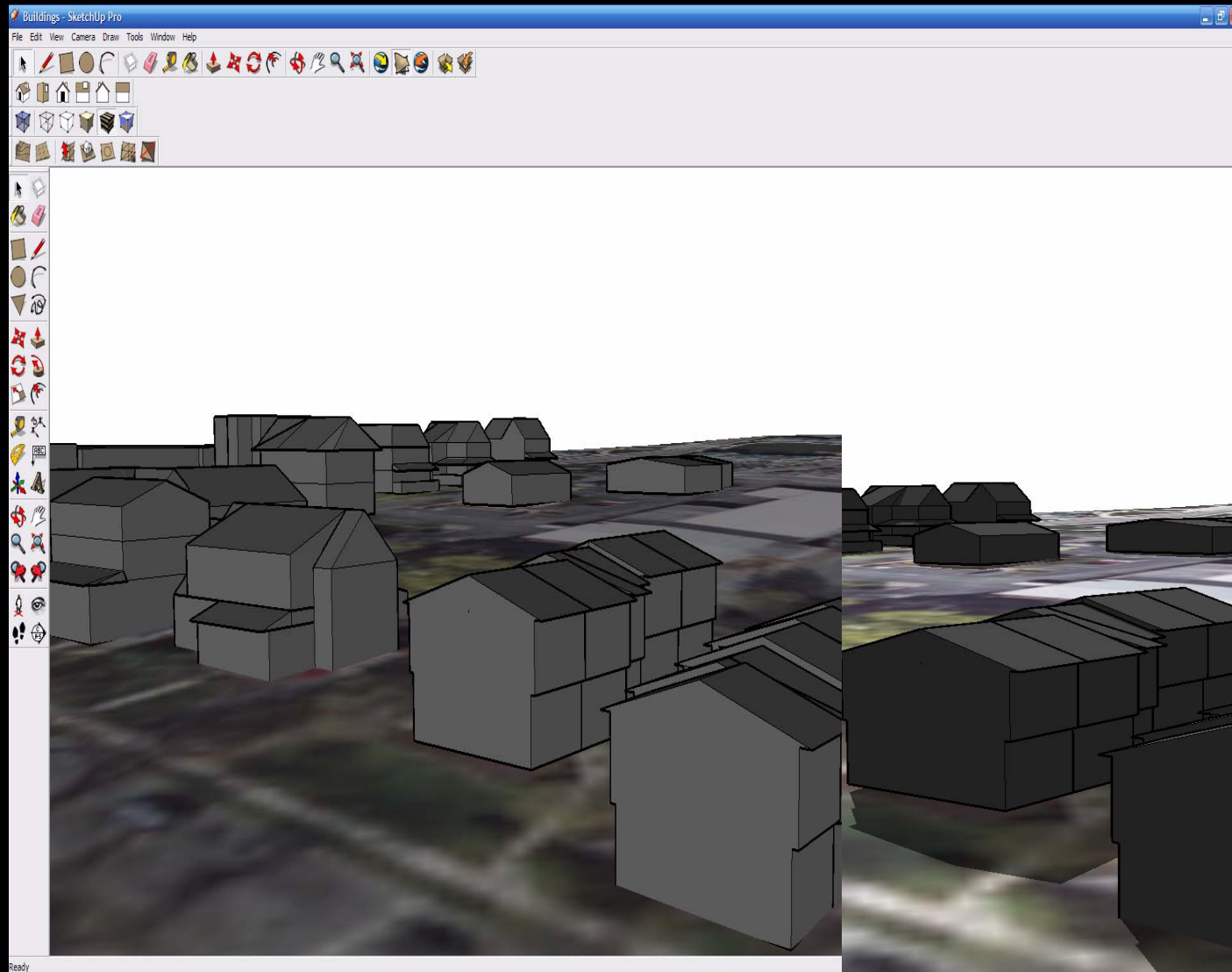
Manipulating Data (SketchUP)



The use of photo textures can be quite complex and time consuming. In order to have the model look correct photo's need to be taken from all angles without obstruction and blended together onto a basic geometry.

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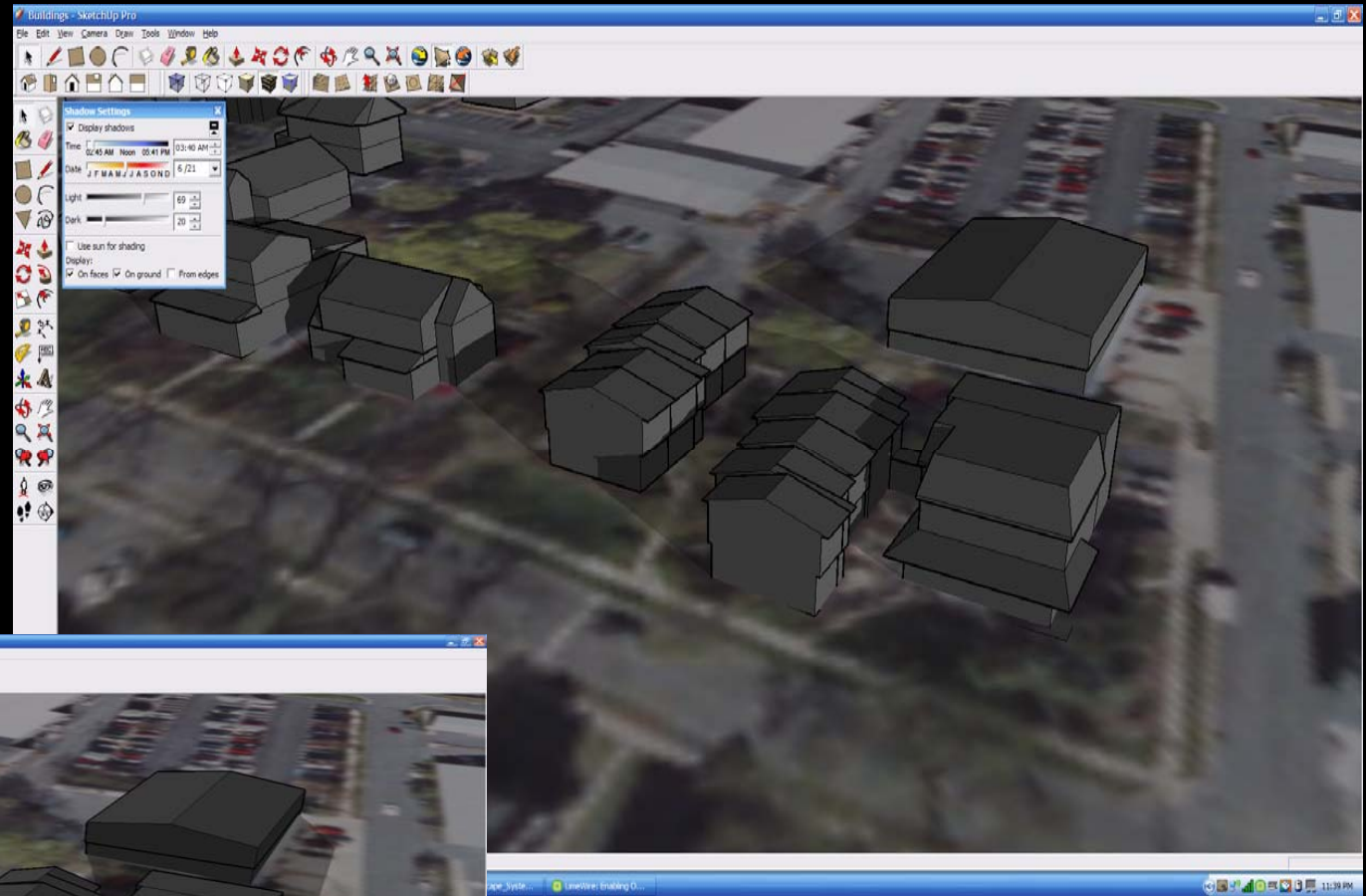
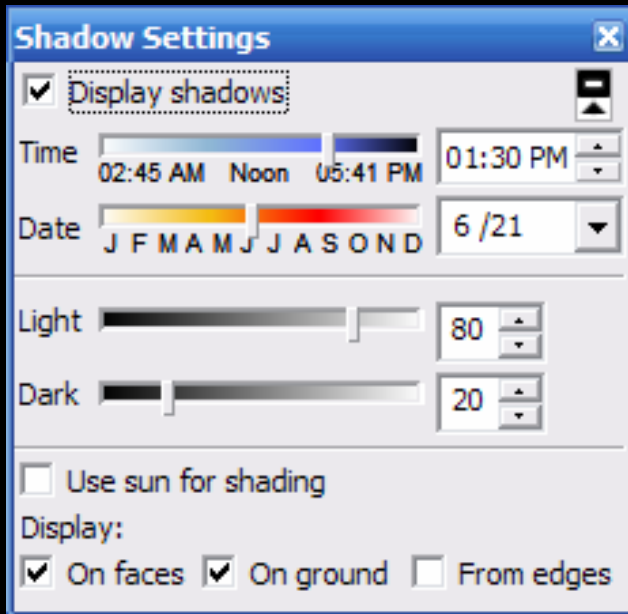
Manipulating Data (SketchUP)



Modeling the entire scene in a slight level of detail in order to bring out building types can be achieved rather quickly and proves to be more effective in sun/shade analysis modeling,

4. Manipulating Data a.k.a Design (SketchUp)
5. [Exporting Data \(SketchUp to Google Earth\)](#)
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Manipulating Data (SketchUP)



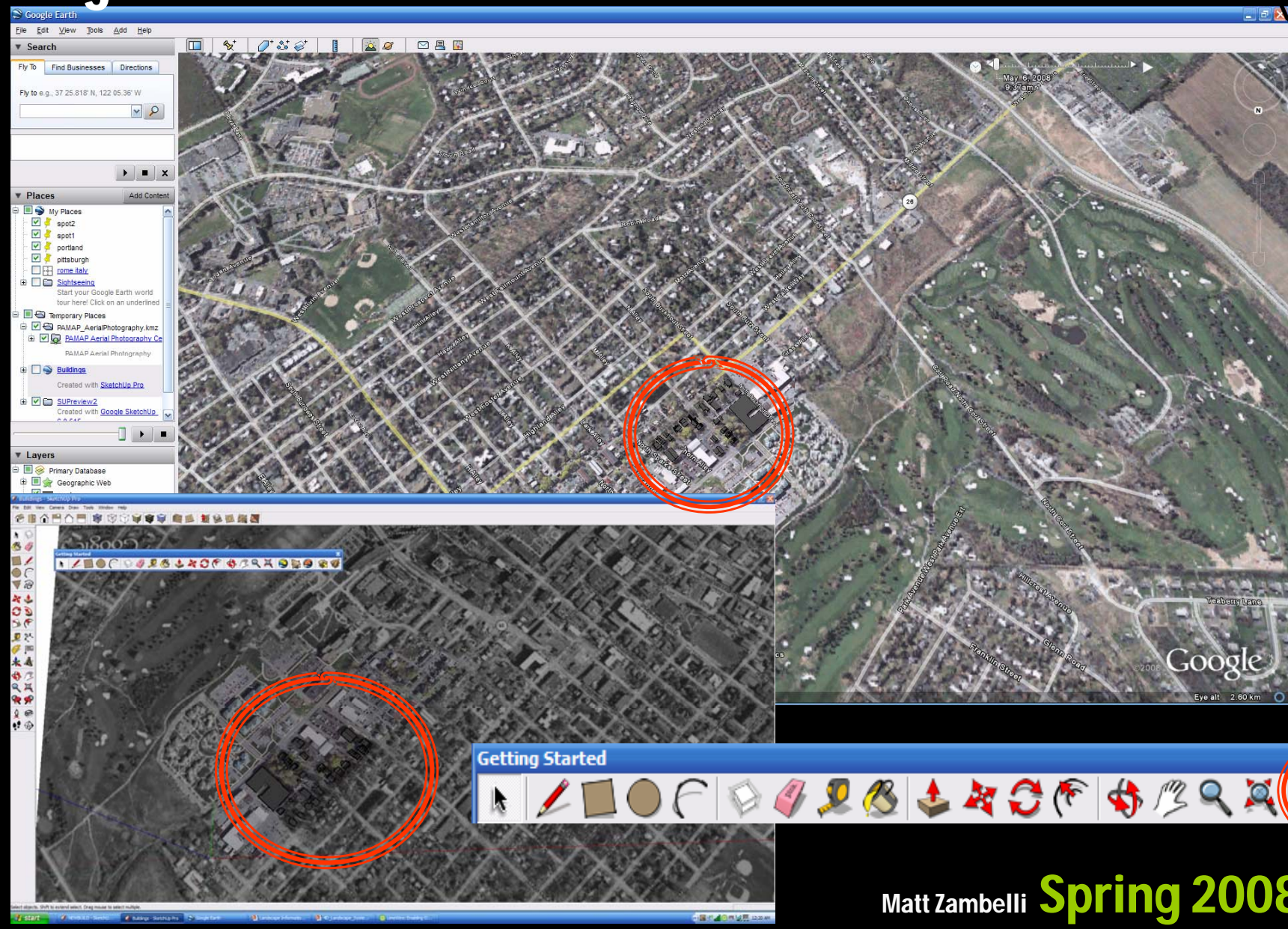
SketchUp Sun/Shade Studies

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Exporting Data (SketchUp to Google Earth)

LIMB Process Outline

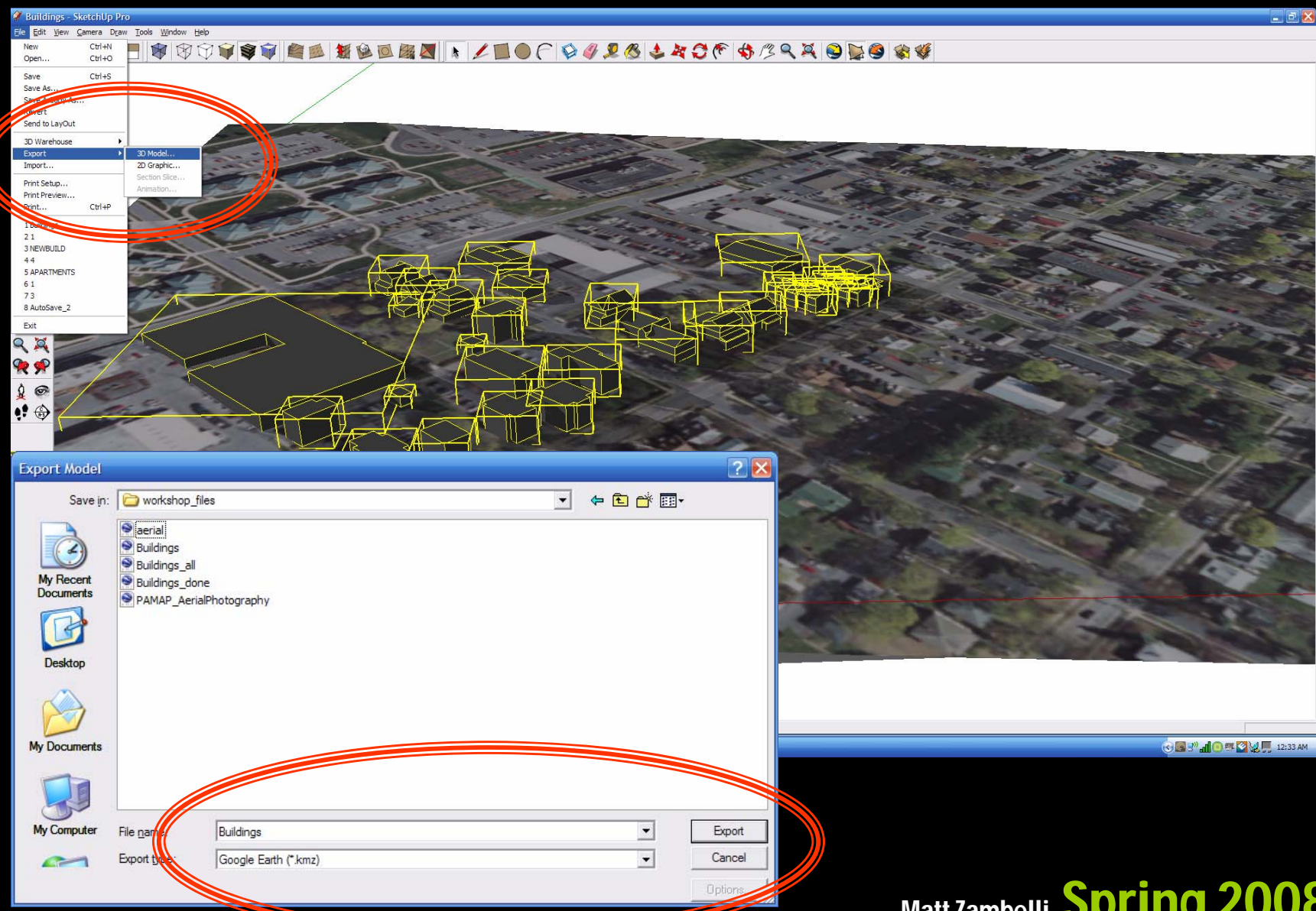
- 5. Exporting Data (SketchUp to Google Earth)
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The top image shows a view of State College in Google Earth with the PASDA aerals displayed. Both the SketchUp model and Google Earth Scene have been linked using the Google Earth Toolbar in SketchUp.

- 5. Exporting Data (SketchUp to Google Earth)
- 6. [Visualizing Data \(Google Earth\)](#)

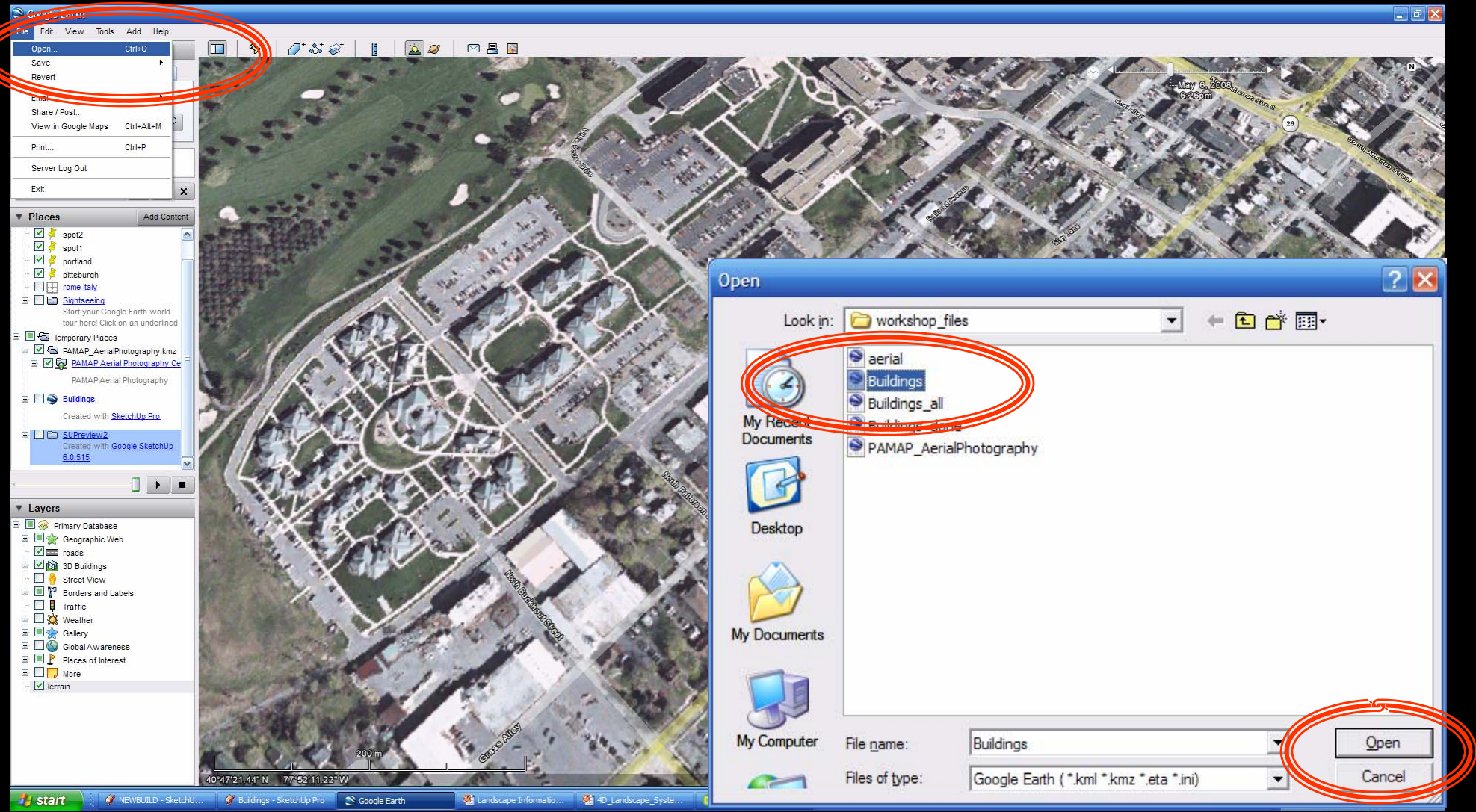
Exporting Data (SketchUp to Google Earth)



In order to export models out of SketchUp, you simply go to file_export_3d model_Export type (.kmz) You can also add new buildings and export them into Google earth via a different kmz file.

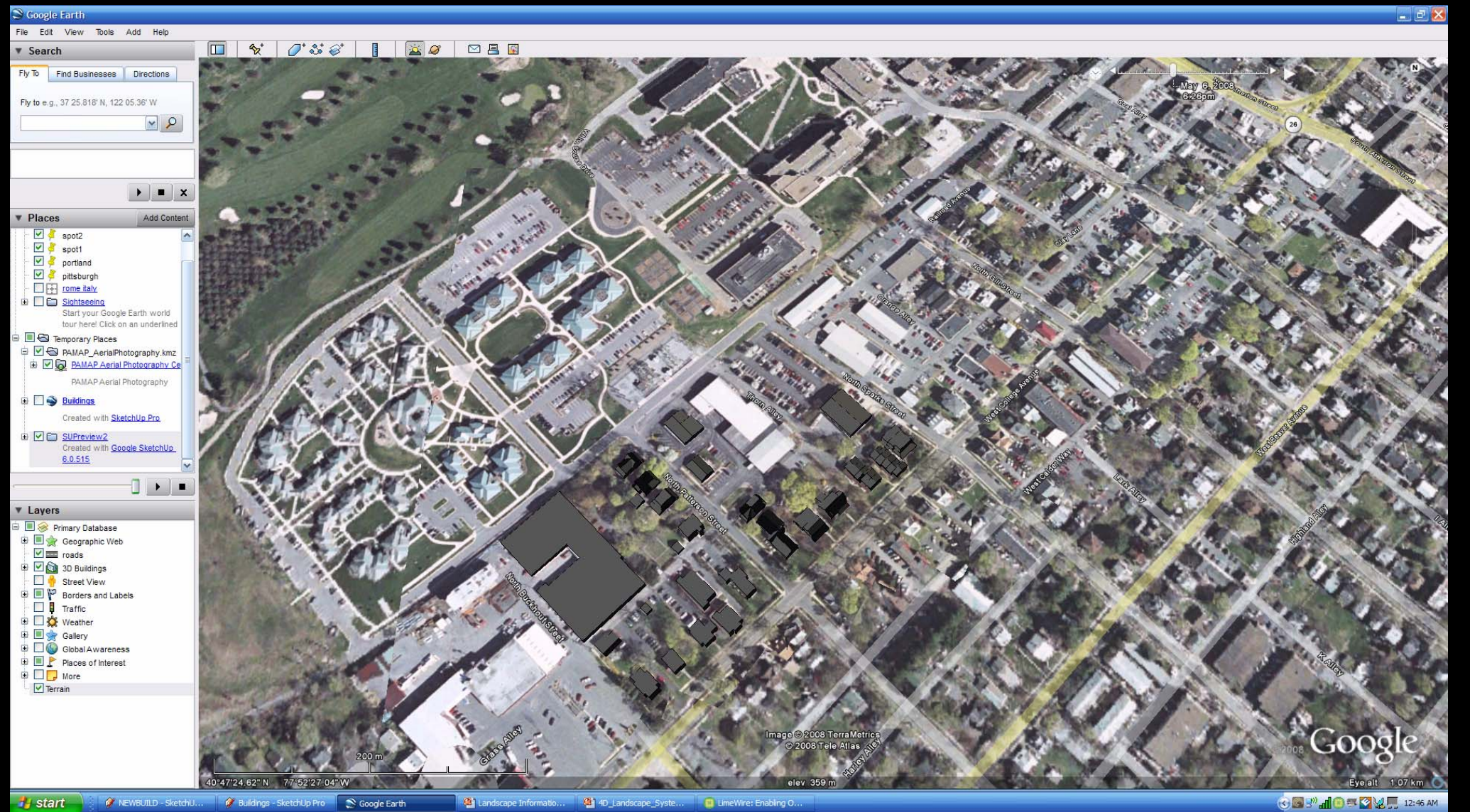
Visualizing Data (Google Earth)

6. Visualizing Data (Google Earth)



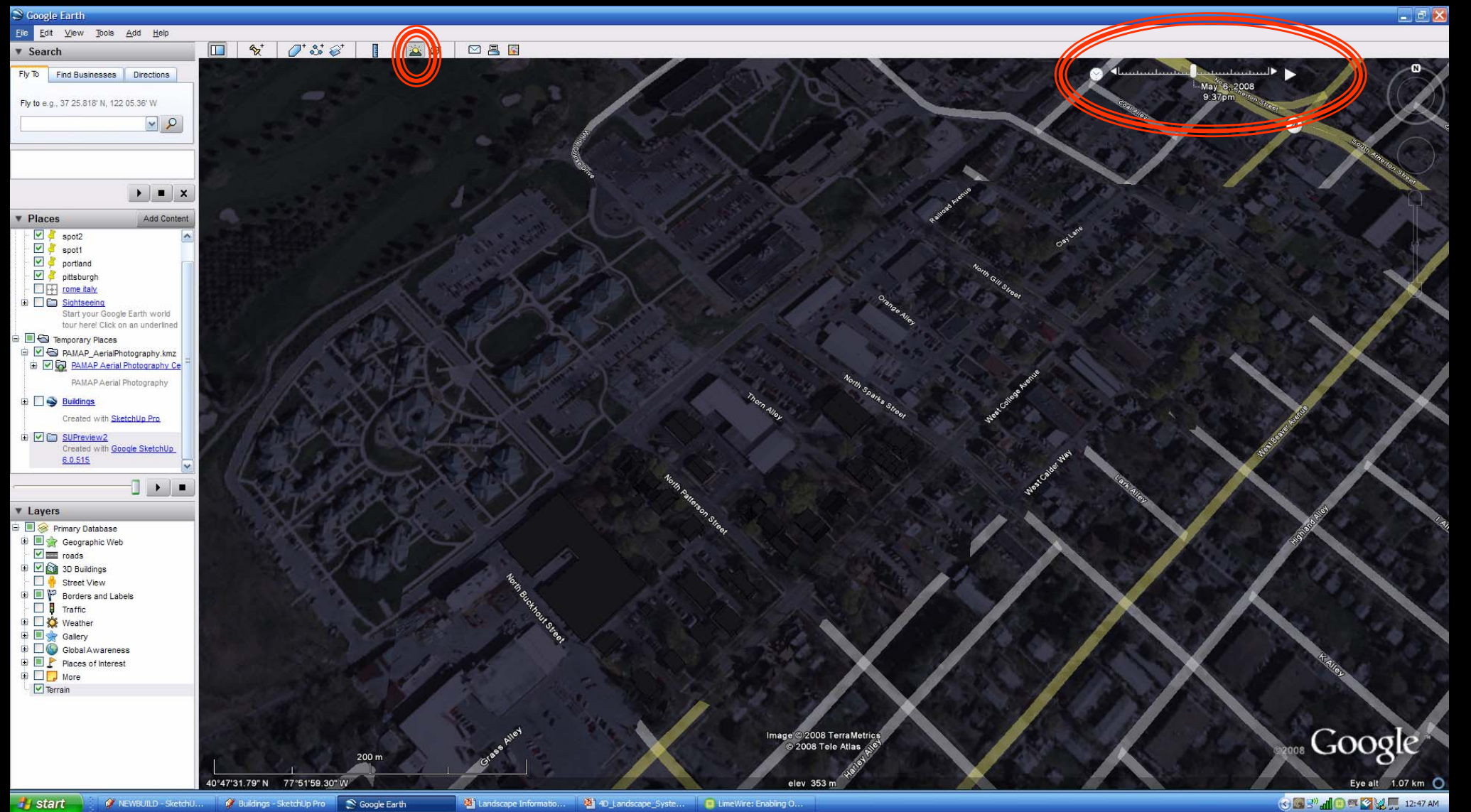
Visualizing Data (Google Earth)

6. Visualizing Data (Google Earth)



Visualizing Data (Google Earth)

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Visualizing Data (Google Earth)

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